

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Vladimir Pavlovic, Simon Kasif and Ashutosh Garg

Title: METHOD AND APPARATUS FOR COMBINING GENE PREDICTIONS  
USING BAYESIAN NETWORKS



Date: 8/30/01

EXPRESS MAIL LABEL NO. EL55175628245

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This Information Disclosure Statement is submitted:

- ☐ under 37 CFR 1.129(a), or  
(First/Second submission after Final Rejection)
- ☒ under 37 CFR 1.97(b), or  
(Within any one of the following time periods: three months of filing national application (other than a CPA) or date of entry of the national stage in an international application; or before the mailing date of a first office action on the merits in a non-provisional application, including a CPA, or a Request for Continued Examination).
- ☐ under 37 CFR 1.97(c) together with either:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, or
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(After the 37 CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, and
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(Filed after final action or notice of allowance, whichever occurs first, but on or before payment of the issue fee)
- ☐ under 37 CFR 1.97(i):  
Applicant requests that the IDS and cited reference(s) be placed in the application filewrapper.  
(Filed after payment of issue fee)

Statement Under 37 CFR 1.97(e)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or
- ☐ No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Statement Under 37 CFR 1.704(d) (Patent Term Adjustment)

Applies to original applications (other than design) filed on or after May 29, 2000

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.
- ☒ Enclosed herewith is form PTO-1449:
  - ☒ Copies of the cited references are enclosed.
  - ☐ Copies of cited references are enclosed except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed. [The earlier application contains copies of the cited references.]
  - ☐ The listed references were cited in the enclosed International Search Report in a counterpart foreign application.
  - ☐ The "concise explanation" requirement (non-English references) for reference(s) [ ] under 37 CFR 1.98(a)(3) is satisfied by:
    - ☐ the explanation provided on the attached sheet.
    - ☐ the explanation provided in the Specification.
    - ☐ submission of the enclosed International Search Report.
    - ☐ the enclosed English language abstract.

☐ Applicant requests that the following pending applications be considered:

Examiner's  
Initials

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_  
Examiner

\_\_\_\_\_  
Date

☐ A copy of each above-cited application, including the current claims, is enclosed.

☐ A copy of each above-cited application, including the current claims, is enclosed, except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed.

The Examiner is requested to return a copy of the above list of pending applications indicating which references were considered with the next office communication.

It is requested that the information disclosed herein be made of record in this application.

Method of payment:

☐ A check for the fee noted above is enclosed, or the fee has been included in the check with the accompanying Reply. A copy of this Statement is enclosed.

☐ Please charge Deposit Account 08-0380 in the amount of \$[ ]. A copy of this Statement is enclosed.

☒ Please charge any deficiency in fees and credit any overpayment to Deposit Account 08-0380.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

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Dated: 8/30/01

INFORMATION DISCLOSURE CITATION  
IN AN APPLICATION

July 19, 2001

(Use several sheets if necessary)

0918.2044-000

APPLICANT

Vladimir Pavlovic et al.

FILING DATE

GROUP

1c979 U.S. PTO

09/943579



U.S. PATENT DOCUMENTS

EXAM- INER INI- TIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	AL						
	AM						
	AN						
	AO						
	AP						
	AQ						

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	Burge, C. and S. Karlin, "Prediction of Complete Gene Structures in Human Genomic DNA," <i>J. Mol. Biol.</i> 266:78-94 (1997).
AS	Salzberg, S. et al., "Microbial gene identification using interpolated Markov models," <i>Nucleic Acids Research</i> , 26(2):544-548 (1998).
AT	Xu, L. et al, "GRAIL: A Multi-Agent Neural Network System for Gene Identification," <i>Proc. IEEE</i> 84(10):1544-1552 (1996).

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FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AU	Kulp, D. et al., "A Generalized Hidden Markov Model for the Recognition of Human Genes in DNA," in <i>ISMB-96: Proc. Fourth Intl. Conf. Intelligent Systems for Molecular Biology</i> , pp. 134-141, Menlo Park, CA, 1996; AAAI Press.
AV	Borodovsky, M. and J. McInnich, "Genmark: Parallel Gene Recognition for Both DNA Strands," <i>Computers Chem.</i> 17(2):123-133 (1993) ✓
AW	Salzberg, S.L. et al. eds, <i>Computational Methods in Molecular Biology</i> , (Amsterdam: Elsevier) 1998. ✓
AX	Fraser, C.M. et al., "Genomic sequence of a Lyme disease spirochaete, <i>Borrelia burgdorferi</i> , <i>Nature</i> 390:(580-586) Dec. 1997. ✓
AY	Murakami, K. and T. Takagi, "Gene recognition by combination of several gene-finding programs," <i>Bioinformatics</i> 14(8):665-675 (1998). ✓
AZ	Salamov, A.A. and V.V. Solovyev, "Ab initio Gene Finding in <i>Drosophila</i> Genomic DNA, <i>Genome Research</i> 10:516-522 (2000). ✓
AR2	Reese, M.G. et al., "Genie--Gene Finding in <i>Drosophila melanogaster</i> , <i>Genome Research</i> 10:529-538 (2000). ✓
AS2	Krogh, A., "Using Database Matches with HMM Gene for Automated Gene Detection in <i>Drosophila</i> , <i>Genome Research</i> 10:523-528 (2000).
AT2	Jordan, M.I. and R.A. Jacobs, "Hierarchical Mixtures of Experts and the AM Algorithm, <i>Neural Computation</i> 6:181-214 (1994).

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		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	AU2	Wolpert, D.H., "Stacked Generalization," Neural Networks 5:241-259 (1992). ✓

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